#12
5-7-02
T. Flood

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):
Mark I. Gardner
Dim-Lee Kwong
H. Jim Fulford, Jr.

Serial No. 09/207,972

Title: ULTRATHIN HIGH-K GATE DIELECTRIC WITH FAVORABLE INTERFACE PROPERTIES FOR IMPROVED SEMICONDUCTOR DEVICE PERFORMANCE

§

Group/Art Unit: 2815
Examiner: M. Warren

Atty. Dkt. No. 5500-36101
TT2823CPA

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March 8, 2002
Date

Kevin L. Daffer

PRELIMINARY AMENDMENT

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Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir/Madam:

This paper is presented as a preliminary amendment to the above-captioned application, which is a continued prosecution application ("CPA") pursuant to 37 C.F.R. § 1.53(d). Prior to initial examination of the application, please amend the case as follows.

REMARKS

Claims 16-33 are pending in the case. Arguments as to the patentability of current claims 16-33 are presented below. In particular, a number of the references are explained to be ineligible as prior art based on recent revision to 35 U.S.C. § 103(c). Further examination and reconsideration of the application are, therefore, respectfully requested.

Section 103 Rejections:

Claims 16, 18, and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,596,214 to Endo et al. (hereinafter "Endo") in view of U.S. Patent No. 5,972,751

to Ramsbey et al. (hereinafter "Ramsbey"). Claims 17, 19, 21, 22, 30, and 31 were rejected under 35 U.S.C. § 103(a) as unpatentable over Endo in view of U.S. Patent 6,015,739 to Gardner et al. (hereinafter "Gardner"). Claim 20 was rejected under 35 U.S.C. § 103(a) as unpatentable over Endo in view of U.S. Patent 5,994,734 to Chou (hereinafter "Chou"). Claims 24-28, 32, and 33 were rejected under 35 U.S.C. § 103(a) as unpatentable over Endo in view of Ramsbey and Gardner. Claim 29 was rejected under 35 U.S.C. § 103(a) as unpatentable over Endo in view of Ramsbey and Chou. However, Ramsbey and Gardner are not available as prior art for these rejections. Therefore, the rejections are respectfully traversed as set forth in more detail below.

Ramsbey and Gardner are not available as prior art for the current rejections. As noted above, claims 16-19 and 21-33 were rejected over a combination of Endo, Ramsbey and/or Gardner. The current application is a continued-prosecution application filed subsequent to November 29, 1999. Therefore, Ramsbey and Gardner are available as prior art against the present claims only under 35 U.S.C. § 102(e). Under the American Inventors Protection Act of 1999 ("the AIPA"), prior art available only under 35 U.S.C. § 102(e) is not usable in a 35 U.S.C. § 103 rejection if the art meets the common ownership requirements of 35 U.S.C. § 103(c) as amended:

> Subject matter developed by another person, which qualifies as prior art only under one of more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The AIPA amended 35 U.S.C. § 103(c) to state that art which qualifies as prior art only under 35 U.S.C. §§ 102(e), (f), or (g) is not available for rejections under 35 U.S.C. § 103 if that art was commonly owned or subject to an obligation of assignment at the time the subject invention was made. This change to 35 U.S.C. § 103(c) is effective for any application filed on or after November 29, 1999.

It is noted that upon filing of the present application, the patents to Ramsbey, Gardner, and the present application were commonly owned by or subject to an obligation of assignment to the same assignee, Advanced Micro Devices, Inc. of Sunnyvale, CA. Accordingly, Ramsbey

and Gardner are not available as prior art against claims of the present application. As such, Endo and Chou, as the remaining cited art, do not teach, suggest, or provide motivation for all limitations of the presently claimed case.

For example, the cited art does not teach or suggest a semiconductor device having a low-trap-density nitrogen-containing oxide arranged upon an upper surface of a semiconductor surface. Independent claims 16 and 24 recite, in part: "a low-trap density nitrogen-containing oxide arranged upon an upper surface of a semiconductor substrate."

Endo, however, does not disclose a semiconductor device having a low-trap-density nitrogen-containing oxide arranged upon an upper surface of a semiconductor substrate. In fact, the Office Action states that "Endo does not specifically show that the nitrogen containing oxide layer is a low trap density layer." (Office Action -- page 2). Furthermore, as set forth in more detail in previous responses, Endo teaches away from a low-trap-density nitrogen-containing oxide arranged upon an upper surface of a semiconductor substrate, as recited in claims 16 and 24. Therefore, Endo does not teach a semiconductor device having a low-trap-density nitrogen-containing oxide arranged upon an upper surface of a semiconductor substrate, as recited in claims 16 and 24. Consequently, Endo does not teach all limitations of claims 16 and 24.

In addition, Chou discloses a modified gate structure for a non-volatile memory device. Although Chou appears to teach a first dielectric formed on a substrate (Chou -- col. 2, lines 59-60), Chou does not teach or suggest a semiconductor device having a low-trap-density nitrogen-containing oxide arranged upon an upper surface of a semiconductor surface, as recited in claims 16 and 24. Furthermore, Chou does not disclose motivation to modify the cited art such that their combination teaches the claimed low-trap-density nitrogen-containing oxide. Therefore, Chou cannot remedy the deficiencies of the cited art with respect to independent claims 16 and 24. As a result, Chou cannot remedy the deficiencies of the cited art with respect to rejected claims 20 and 29, which depend from claims 16 and 24, respectively.

For at least the reasons cited above, independent claims 16 and 24 and claims dependent therefrom, are patentably distinct from the cited art. Accordingly, removal of the § 103 rejections of claim 16-33 is respectfully requested.

CONCLUSION

In the present Preliminary Amendment, Applicant has pointed out the patentability of the pending claims with respect to rejections made in the Final Office Action mailed January 8, 2002. In view of Applicants' amendments and remarks traversing rejections, Applicants assert that pending claims 16-33 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned attorney earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment, to Conley, Rose & Tayon, P.C. Deposit Account No. 50-1505/5500-36101.

Respectfully submitted,

Kevin L. Daffer
Reg. No. 34,146
Attorney for Applicant(s)

Conley, Rose & Tayon, P.C.
P.O. Box 398
Austin, TX 78767-0398
Ph: (512) 476-1400
Date: March 8, 2002
AMM

#11

PTO/SB/35 (11-00)
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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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March 8, 2002
Date

Kevin L. Daffer

REQUEST AND CERTIFICATION UNDER 35 U.S.C. 122(b)(2)(B)(i)

Atty Docket Number:	5500-36101
First Named Inventor:	Mark I. Gardner et al.
Title:	ULTRATHIN HIGH-K GATE DIELECTRIC WITH FAVORABLE INTERFACE PROPERTIES FOR IMPROVED SEMICONDUCTOR DEVICE PERFORMANCE

I hereby certify that the invention disclosed in the attached application **has not and will not be** the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. I hereby request that the attached application not be published under 35 U.S.C. 122(b).

March 8, 2002
Date

Kevin L. Daffer, Reg. No. 34,146

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This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application **upon filing**.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

Burden Hour Statement: This collection of information is required by 37 CFR 1.213(a). The information is used by the public to request that an application not be published under 35 U.S.C. 122(b) (and the PTO to process that request). Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This form is estimated to take 6 minutes to complete. This time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#10

5-7-02

Inventor(s):
Mark I. Gardner
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Serial No. 09/207,972

Title: ULTRATHIN HIGH-K GATE DIELECTRIC WITH FAVORABLE INTERFACE PROPERTIES FOR IMPROVED SEMICONDUCTOR DEVICE PERFORMANCE

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Kevin L. Daffer

CONTINUED PROSECUTION APPLICATION (CPA) REQUEST TRANSMITTAL
(Only for continuation or divisional applications under 37 CFR § 1.53(d))

This is a request for a continued prosecution application (CPA) under 37 C.F.R. § 1.53(d) of prior application no. 09/207,972, filed on December 9, 1998.

Enclosed are the following items:

1. Request & Certification under 35 U.S.C. 122(b)(2)(B)(i) (1 pg); and
2. Preliminary amendment (4 pgs).

Respectfully submitted,

Kevin L. Daffer
Reg. No. 34,146
Attorney for Applicants

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Conley, Rose & Tayon
P.O. Box 398
Austin, TX 78767-0398
Date: March 8, 2002

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